

1,048,353

PATENT SPECIFICATION

DRAWINGS ATTACHED

1,048



Date of Application and filing Complete Specification: Jan. 28, 1965.
No. 3823/65.

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Int. Cl.:—A 61 b 17/32

COMPLETE SPECIFICATION

Improvements relating to Dermatomes

ERRATA

SPECIFICATION No. 1,048,353

Page 1, line 55, for "for" read "from"
Page 2, line 90, for "inside" read "Inside"

THE PATENT OFFICE
5th April 1967

25 rotatable shaft having a crank pin engaging in a slotted member of the blade holder to cause the holder and blade to reciprocate, and a guard member mounted in front of the cutting edge of the blade to limit the thickness of skin removed by the instrument, said guard member being pivoted to the cutting head by side arms extending from the member and attached to the cutting head by pivot screws, and resiliently urged upwards, cams or eccentrics being positioned to engage the upper part of the guard member near its ends and means to 30 rotate said cams to depress the member, and a detent lever movable with the cams and having a pin or the like arranged to occupy one of several recesses in the cutting head to position the guard member according to the depth 35 of cut desired.

40 In one arrangement the cams are fixed to a shaft, rotatable in the cutting head, and a lever is fixed to one cam and has a spring-pressed detent pin at its free end which enters one of the recesses and may be manually withdrawn

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Figure 3 is an elevation, looking at the hand end of Figure 1, and partly broken a to show internal parts.

Figure 4 is a section of Figure 3 on the IV—IV.

Figure 5 is a fragmentary sectional , showing a modification.

Referring to Figures 1 to 4 of the drawi the instrument has a cutting head 1 and a tachable handle 2. A removable base pla is attached to the underside of the top pa of the cutting head. A rotatably mounted ing spindle 5 extends through the handle is provided on one end with a crank pi A blade carrier 7 is slidably located in a ti verse groove 8 in the underside of the top 4 of the cutting head, and has a driving 9 extending upwardly therefrom, with a tical slot 10 in such driving lug.

A sliding block 11 is mounted in the ve slot and has a bearing aperture or reces with which the crank pin 6 of the dr spindle engages. Means is provided for re

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COMPLETE SPECIFICATION

Improvements relating to Dermatomes

I, DAVID SYDNEY DAVIES, a South African citizen of D3 Villa Capri, Beach Road, Mouille Point, Cape Town, Cape Province, Republic of South Africa, do hereby declare the invention for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 This invention relates to an improved surgical instrument used for removing strips of skin from a patient for skin-grafting purposes and sometimes known as a dermatome. Such instruments are known and comprise a thin cutting blade which is reciprocated transversely of the line of movement of the instrument, which is manually moved over the part of the body from which skin is to be removed.

15 According to the invention there is provided a surgical instrument of the kind referred to comprising a cutting head, grooved to accommodate a blade holder carrying a blade, and a rotatable shaft having a crank pin engaging in a slotted member of the blade holder to cause the holder and blade to reciprocate, and a guard member mounted in front of the cutting edge of the blade to limit the thickness of skin removed by the instrument, said guard member being pivoted to the cutting head by side arms extending from the member and attached to the cutting head by pivot screws, and resiliently urged upwards, cams or eccentrics being positioned to engage the upper part of the guard member near its ends and means to rotate said cams to depress the member, and a detent lever movable with the cams and having a pin or the like arranged to occupy one of several recesses in the cutting head to position the guard member according to the depth of cut desired.

In one arrangement the cams are fixed to a shaft, rotatable in the cutting head, and a lever is fixed to one cam and has a spring-pressed detent pin at its free end which enters one of the recesses and may be manually withdrawn

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so that the lever can be turned to rotate the cams to adjust the position of the guard member whereafter the detent pin is released and enters a chosen recess.

In a modified arrangement the shaft is axially movable, as well as being rotatable, and a knob fixed to the shaft may be pushed inwards against the action of a spring to release an end of a detent lever fixed to an end of the shaft for engagement with a recess, whereafter the knob may be turned to rotate the cams and released when the end of the detent lever is over a chosen recess.

The invention will be more fully described with reference to the accompanying drawings in which:—

Figure 1 is a side elevation of the instrument.

Figure 2 is a view of Figure 1, looking in the direction of the arrow A, a bottom plate of the instrument being removed to show internal parts.

Figure 3 is an elevation, looking at the left hand end of Figure 1, and partly broken away to show internal parts.

Figure 4 is a section of Figure 3 on the line IV—IV.

Figure 5 is a fragmentary sectional view showing a modification.

Referring to Figures 1 to 4 of the drawings, the instrument has a cutting head 1 and a detachable handle 2. A removable base plate 3 is attached to the underside of the top part 4 of the cutting head. A rotatably mounted driving spindle 5 extends through the handle and is provided on one end with a crank pin 6. A blade carrier 7 is slidably located in a transverse groove 8 in the underside of the top part 4 of the cutting head, and has a driving lug 9 extending upwardly therefrom, with a vertical slot 10 in such driving lug.

A sliding block 11 is mounted in the vertical slot and has a bearing aperture or recess 12 with which the crank pin 6 of the driving spindle engages. Means is provided for retain-

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ing the blade carrier in the groove 8 consisting of flat springs 13 positioned in grooves 7A in the carrier and spaced locating projections 14 are provided on the underside of the blade carrier to locate one or more cutting blades 15 thereon so that the cutting edge, or edges, thereof project, by a small amount, as required for skin-removing purposes, from the front side of the cutting head 1. The arrangement is such that rotation of the driving spindle imparts transverse reciprocatory motion to the blade carrier 7 and consequently to the cutting blade or blades 15, located thereon. The spindle 5 may be rotated by a flexible shaft 16 driven by a dental drill, or a suitable motor, and for this purpose the sleeve of the flexible shaft is attached to the instrument by a slot 17 and notch 18 in a sleeve 18 forming an extension of the handle 1. The spindle 5 has an end 19 shaped to engage with a cooperating part of the flexible shaft.

In the operative condition of the instrument, the base plate 3 covers the blade carrier 7 with its blade or blades 15, and its front edge is located beneath, and a small distance inwardly, of the cutting edge or edges of such blade or blades. The base plate is recessed to take the blade-locating projections 14 and thereby retains the blade or blades in position. The recesses are not all shown on the drawings but their positions may be understood from Figure 2 where the various projections may be seen, while Figure 3 shows one of the depressions for a lug 14.

To control the thickness of the layer of skin removed, a guard bar 20 is arranged to co-act with the top side of the blade edge, or edges, so as to regulate the extent of the gap therebetween. This guard bar is of rectangular U-shape and is pivotally attached to the part 4 by the free ends of its two parallel limbs 21, one to each end of the top part 4 of the cutting head by pivot screws 22. The bottom side of its straight intermediate part 23, joining the two limbs, co-acts with the top side of the blade, or blades, to regulate the aforesaid skin thickness controlling gap. This guard bar is resiliently biased in an upward direction by springs 24, while its downward pivoting movement is controlled by two pivotally mounted lever actuated cams or eccentrics 25 arranged, one at each end of the top part of the cutting head with each cam bearing downwardly against the top side of a limb 21. The two cams 25 are connected together by a shaft 26 and one of the cams is fixed to a lever 27 provided with a screw-threaded or spring-pressed locating pin 28 adapted to be engaged in any one of several arcuately arranged spaced recesses 29 provided on the corresponding end of the top part 4 of the cutter head.

The base plate 3 is secured to the underside of the top part of the cutting head by two spaced screws 30 passing through the top

part, and is accurately located in position by at least two spaced dowel-like locating pins 31 projecting from the underside of the top part and engaging in holes or recesses in the base plate.

The spaced projections 14 on the blade carrier are so arranged that two standard safety razor blades can be located on the underside of the blade carrier, in endwise abutting relationship. Alternatively, a special single blade equal in length to the two standard safety razor blades referred to, may be used.

Figure 5 shows an alternative adjusting and detent arrangement for the guard member and is drawn to a larger scale.

In this example the shaft 26, which carries the cams, is movable axially in the top part 4 of the cutting head. For this purpose a knurled head or knob 32 is fixed to one end of the shaft and the boss of this head is shaped to function as one of the cams and is marked 33. A similar cam 34 is fixed to the other end of the shaft and to the extreme end of the shaft a detent lever 35 is fixed, as by hard soldering. Inside the part 4 is a compression spring 36, and a bush 37 is slidable on the spindle, and in the hole which accommodates the spring. The detent lever has an inturned end 38 which is shaped to enter the recesses 29.

In operation, the knob 32 is pushed inwards to compress the spring and release the detent end from the recess in which it is located. The knob is then rotated until the detent end is in line with a desired recess and is then released so that the spring can move the shaft 26 endwise and cause the detent end to enter the chosen recess.

WHAT I CLAIM IS:—

1. A surgical instrument of the kind referred to comprising a cutting head, grooved to accommodate a blade holder carrying a blade, and a rotatable shaft having a crank pin engaging in a slotted member of the blade holder to cause the holder and blade to reciprocate, and a guard member mounted in front of the cutting edge of the blade to limit the thickness of skin removed by the instrument, said guard member being pivoted to the cutting head by side arms extending from the member and attached to the cutting head by pivot screws, and resiliently urged upwards, cams or eccentrics being positioned to engage the upper part of the guard member near its ends and means to rotate said cams to depress the member, and a detent lever movable with the cams and having a pin or the like arranged to occupy one of several recesses in the cutting head to position the guard member according to the depth of cut desired.

2. A surgical instrument as claimed in Claim 1 wherein the cams are fixed to a shaft rotatable in the cutting head and one end of the detent lever is fixed to one of the cams for rotational movement therewith and a detent

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pin is slideable in the other end of the lever and has a spring which presses the pin into one of said recesses, and a knob is attached to the pin whereby the pin may be withdrawn from a recess against the action of the spring and the lever may be turned to rotate the cams to a desired position.

3. A surgical instrument as claimed in Claim 1 wherein the cams are attached to a shaft rotatable and axially movable in the cutting head and a knob is attached to one cam whereby the shaft and cams may be rotated, and a spring within the cutting head is arranged to urge the shaft and cams in one direction and

cause an end of a detent lever, fixed to an end of the shaft, to enter one of said recesses, while if the knob is pressed against the action of the spring the detent lever end is removed from the recess and the cams may be rotated by turning the knob.

4. A surgical instrument of the kind referred to substantially as herein described with reference to the accompanying drawings.

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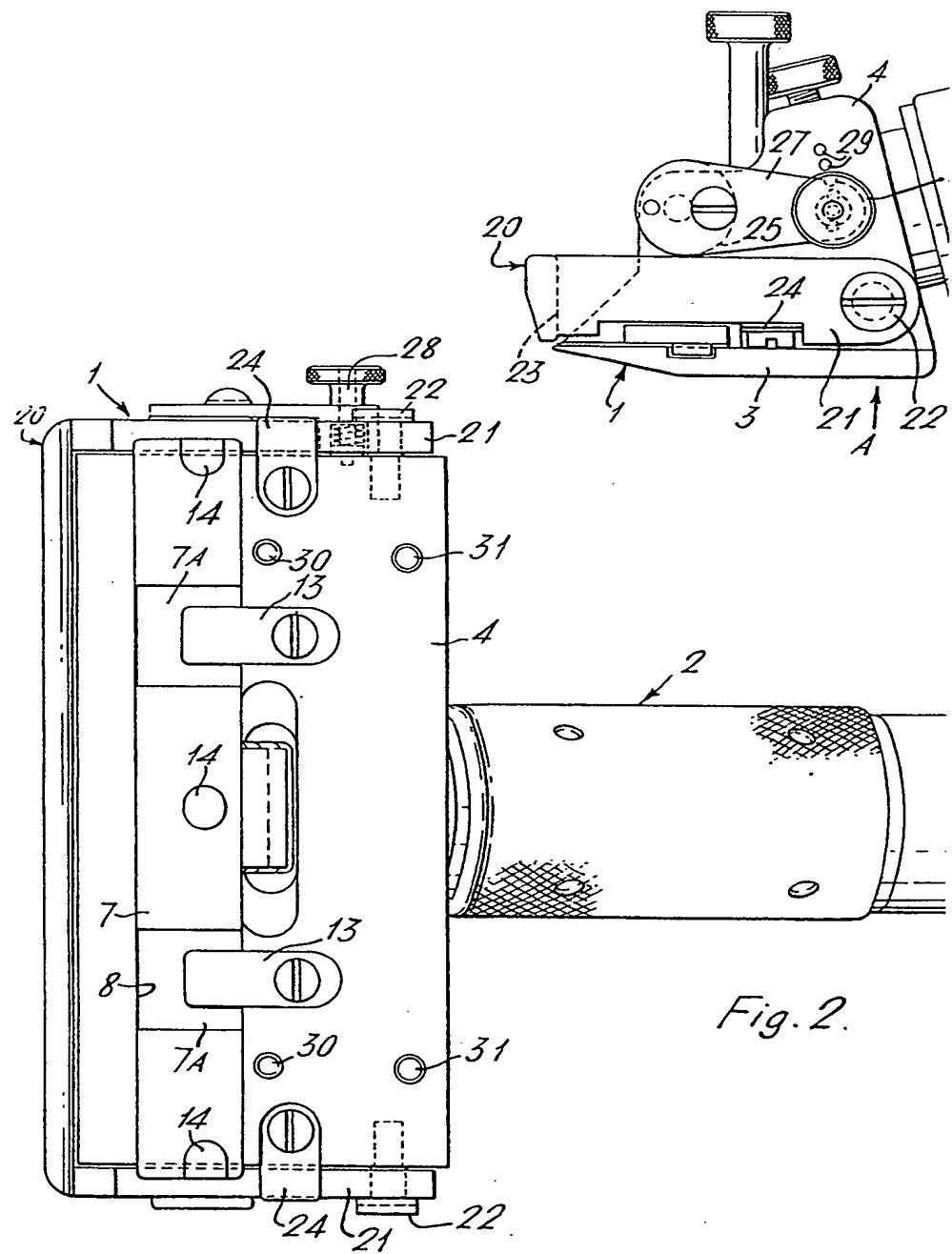


Fig. 2.

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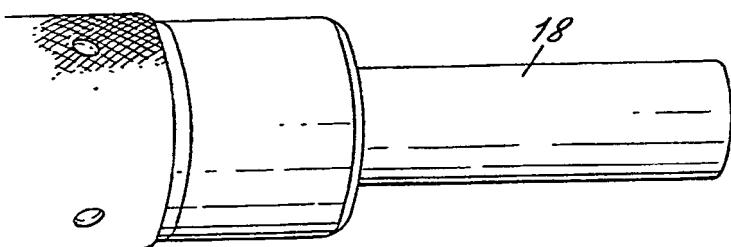
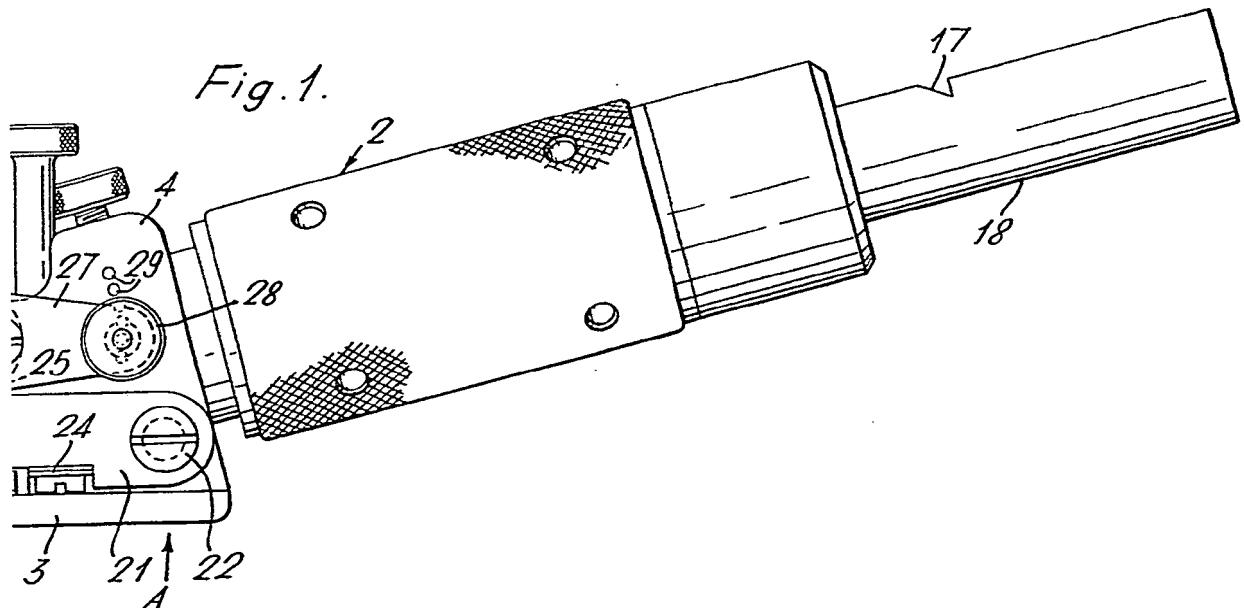
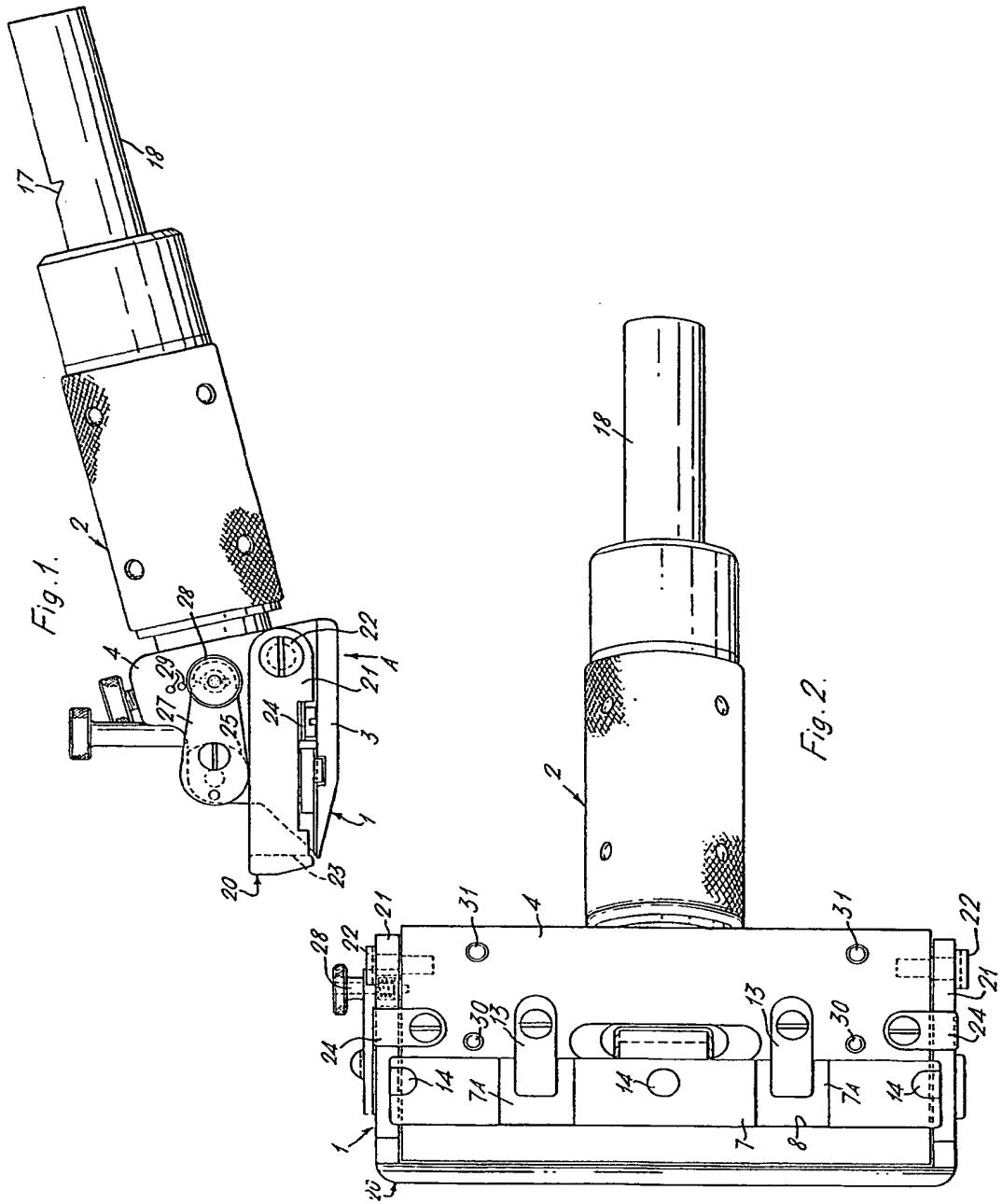


Fig. 2.

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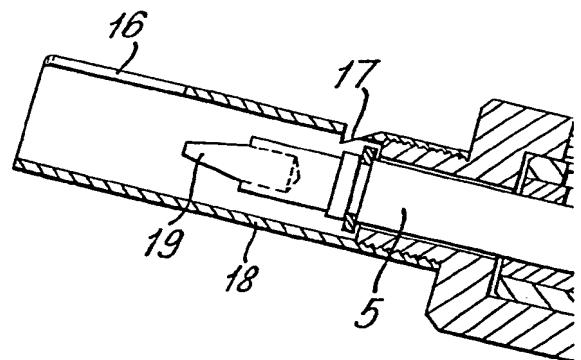
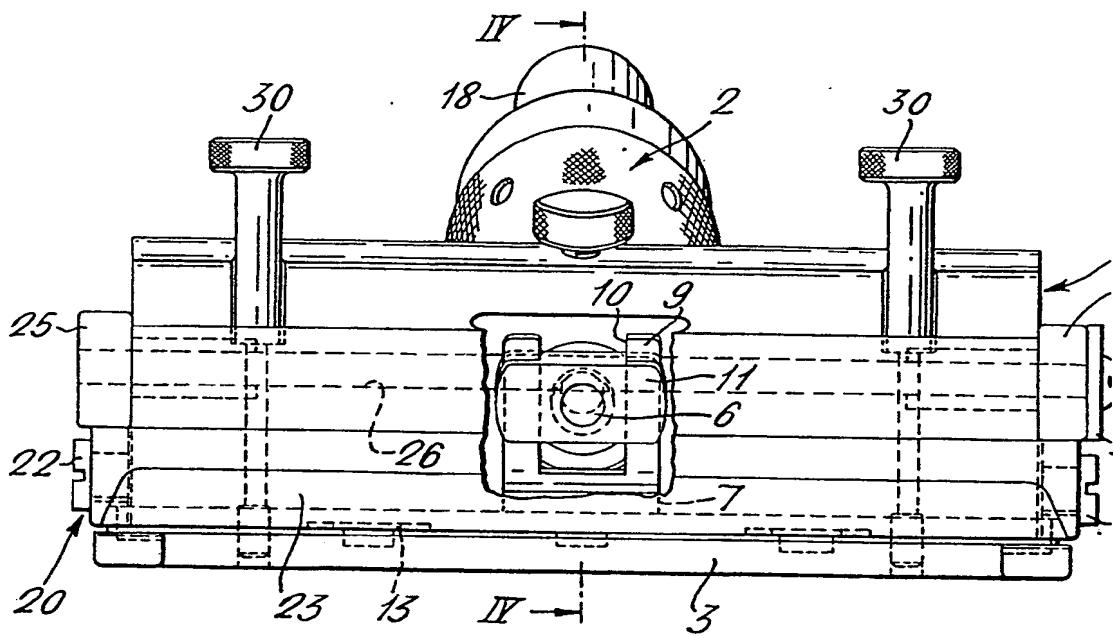
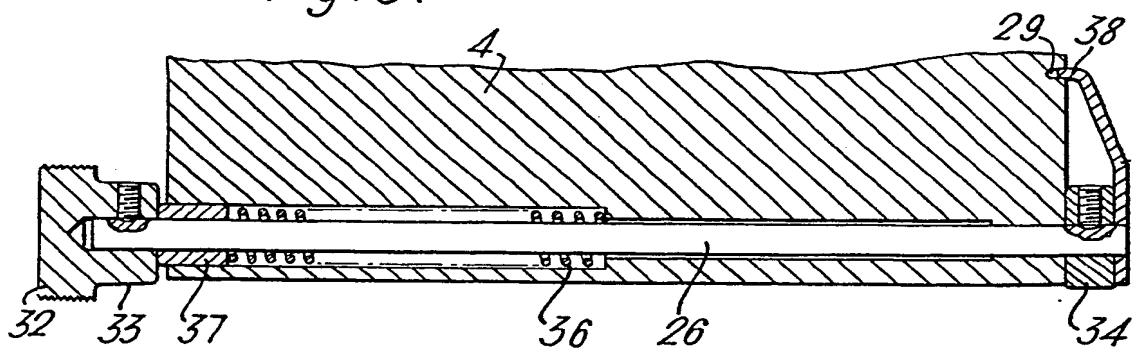


Fig. 5.



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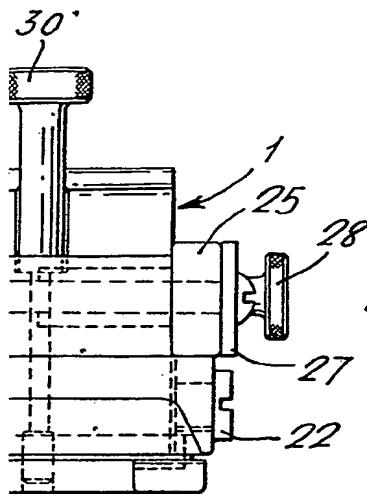


Fig. 3.

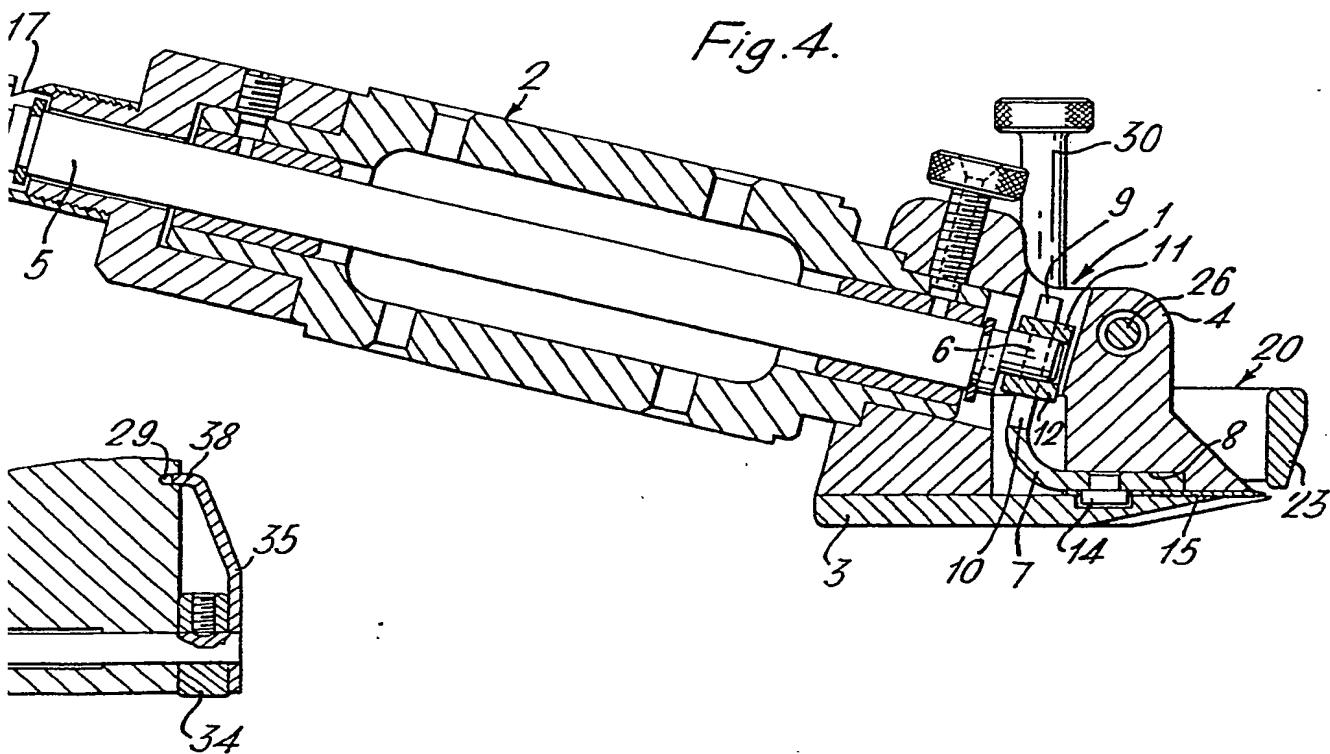


Fig. 4.

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